

REMARKS

Reconsideration and withdrawal of the rejections set forth in the Office Action are respectfully requested in view of this amendment and the following reasons. By this amendment, claims 1-7 and 9-26 have been amended, and claim 8 has been canceled. Claims 27-39 have been previously withdrawn from further consideration. Accordingly, claims 1-7 and 9-26 are pending in this application. The cancellation of claim 8 is made without prejudice or disclaimer to the subject matter contained therein.

Claim 1 has been amended to incorporate the features of claims 8, 11 and 23, and to more clearly define the claimed subject matter. Specifically, the language "A device for applying liquid media, particularly culture media and/or reaction media," recited in lines 1-2, has been replaced with -- A device for creating hanging drops --. Support for this amended feature may be found at least in paragraphs [0007] and [0008] of the present application, as published. Furthermore, the language "a substantially planar top limit surface," recited in line 3, has been replaced with -- a substantially planar and rectangular top limit surface onto which in each case between 10 and 80 μ l of liquid medium can be applied, the distance between adjacent elevations being at least 0.5 mm --. Support for this amended feature may be found at least in claims 11 and 23, as originally filed, and in Figs. 1-5.

Claims 2-7 and 9-26 have been amended to correct informalities and/or to remove the language that may be considered by the Examiner as being indefinite.

It is respectfully submitted that the above amendments introduce no new matter within the meaning of 35 U.S.C. §132. For at least these reasons, entry of the present Amendment is therefore respectfully requested. Accordingly, Applicants request reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Rejections Under 35 U.S.C. §112

Claim 1 stands rejected under 35 U.S.C. §112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Particularly, the Examiner indicated that the phrase “at least one, in particular at least two, sharp-edged boundaries” is indefinite because it is unclear how many sharp-edged boundaries are being claimed, suggesting amending it to “at least one sharp-edged boundary” or “at least two sharp-edged boundaries.”

In accordance with the Examiner’s suggestion above, the language “at least one, in particular at least two, sharp-edged boundaries,” recited in claim 1, line 4, has been replaced with -- at least two sharp-edged boundaries --. Applicants believe that this amendment is sufficient to overcome this rejection. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. §112, second paragraph, rejection of claim 1.

Rejections Under 35 U.S.C. §102

Claims 1, 6, 8, 12-15, 21, and 24 stand rejected under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent No. 6,303,387 issued to Birch, *et al.* (“Birch”).

“Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration.” *W.L. Gore & Assocs. V. Garlock*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

Claim 1 has been amended to incorporate the features of claims 11 and 23, neither of which is subject to this 35 U.S.C. §102(b) rejection, and thus is allowable for at least this reason.

Claim 8 has been canceled without prejudice or disclaimer, thereby rendering the rejection thereof moot. Claims 6, 12-15, 21, and 24 depend directly or indirectly from claim 1, and thus are allowable for at least this reason. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. §102(b) rejection of claims 1, 6, 8, 12-15, 21, and 24.

Rejections Under 35 U.S.C. §103

I. Claims 2-5, 7, 9-11, 16-18, and 23 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Birch.

To establish an obviousness rejection under 35 U.S.C. § 103(a), four factual inquiries must be examined. The four factual inquiries include (a) determining the scope and contents of the prior art; (b) ascertaining the differences between the prior art and the claims in issue; (c) resolving the level of ordinary skill in the pertinent art; and (d) evaluating evidence of secondary consideration. *Graham v. John Deere*, 383 U.S. 1, 17-18 (1966).

The presently claimed subject matter is directed to providing hanging drops by applying liquid to a corresponding device, which is then rotated (*See* paragraphs [0007]-[0009]). The hanging drops are used as reaction vessels or for the cultivation of cells like embryonic stem

cells. In this respect, the drops should be as large as possible (See paragraph [0010]).

Applicants propose a device as recited in claim 1 to produce such big hanging drops.

Claim 1, as amended, recites, *inter alia*:

A device for creating hanging drops, the device having at least two elevations made of a *hydrophobic material* and with a substantially *planar and rectangular* top limit surface onto which in each case between 10 and 80 μ l of liquid medium can be applied, the distance between adjacent elevations being *at least 0.5 mm*, and the elevations having, at the top limit surface, at least two *sharp-edged boundaries* arranged *parallel to one another*. (emphasis added)

The subject matter of the above claimed device includes a combination of specific features as follow:

- First, the device has elevations onto which liquid medium can be deposited, each of the elevations being clearly separated from adjacent elevations. It has been found out that the distance between adjacent elevations should be at least 0.5 mm.
- Those elevations are made of hydrophobic material in order to guarantee that drops deposited on the top surface are repelled from the surface. Such drops maintain in their original “drop form” and do not run throughout the surface of the elevations.
- The top limit surface is planar and rectangular, wherein the boundaries of the elevations are arranged parallel to each other. Those boundaries ensure that forces applying on drops, which are deposited on the top limit surface of the elevations when the device rotates, are not focused onto one point. Rather, this feature of the claimed subject matter makes such forces be defocused.
- The top limit surface has sharp-edged boundaries, thereby preventing drops from

leaving the top limit surface.

This arrangement causes distinguishable effects, as shown in the attachment, in which it can be observed that a plurality of drops, each having a volume of about 50 μ l, are distributed over the top limit surfaces of the elevations. It should be appreciated that the attached picture shows the state after the device has rotated over an angle of nearly 90° and that even in this position the drops on the elevations are completely stable. These distinguishable results, which are derived from the presently claimed constitution, cannot be expected by one of ordinary skill in the art based on prior art devices.

In contrast to the presently claimed subject matter, Birch merely discusses a method and a device for the transfer of “small” volumes of liquid media, in particular, in the context of biological or chemical analysis of these media (*See* Col. 1, lines 12-16). In the context of Birch, the term “small” refers to drops having volumes between a thousandth and millionth of a cubic millimeter (*See* Col. 2, lines 22-24). Accordingly, it is reasonable to conclude that the teachings of Birch are restricted to transferring a quantity of liquid having a volume of less than about 2 μ l (*See* Birch, claim 1).

Furthermore, there are structural differences between the device taught by Birch and the device of the presently claimed subject matter. Actually, Birch teaches the opposite of the present claims: in Col. 5, lines 5-9, it is described that the tip of the rod shown in Fig. 1 is wettable, i.e., hydrophilic. Only the side walls of the rod are hydrophobic in order to ensure that no liquid is transferred in an uncontrolled way. In contrast, according to an aspect of the claimed subject matter, the elevations are made of a hydrophobic material onto which in each case

between 10 and 80 μ l of liquid medium can be applied.

Accordingly, Applicants respectfully submit that Birch fails to teach or suggest the above-cited features of claim 1, and that there is no motivation or market trend for one of ordinary skill in the art to modify the teachings of Birch in an attempt to arrive at the subject matter of claim 1. Therefore, it is respectfully submitted that claim 1 is not obvious and thus allowable over Birch. Claims 2-5, 7, 9-11, 16-18, and 23 depend directly or indirectly from claim 1, and thus are allowable for at least this reason.

II. Claims 19, 20, 25, and 26 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Birch in view of U.S. Patent No. 5,882,930 issued to Baier, *et al.* ("Baier").

An analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. *KSR Int'l. Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007). Furthermore, even if the prior art may be combined, there must be a reasonable expectation of success, and the reference or references, when combined, must disclose or suggest all of the claim limitations. See *in re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants respectfully submit that assuming *arguendo* that the references may be combined and a reasonable expectation of success exists, the combined references do not disclose or suggest all of the claim features because the secondary reference, Baier also fails to teach the claim features cited above with regard to the first 35 U.S.C. §103(a) rejection.

Baier is directed to a transfer device for transferring a plurality of reagent samples from one location to another location having a deposit surface. Similar to the teachings of the primary reference, Birch, Baier focuses on the transfer of microscopic volumes of liquid media. It is described in Baier, for example, in Col. 1, lines 33-35, that fluid samples are in the range of about 100 microns in diameter. Baier, in claim 2, for example, teaches pins having a diameter in the range of between about 30 microns and about 100 microns. However, it is not possible to apply between 10 and 80 μ l of liquid medium onto those pins, as required by the presently claimed subject matter.

Furthermore, as shown in Fig. 3, Baier's pin 12 has a cylindrical shape, and thus does not teach claim 1's elevations which have a "planar and rectangular top limit surface" having "at least two sharp-edged boundaries arranged parallel to one another."

Still furthermore, since Birch and Baier both deal exclusively with the transfer of microscopic volumes of liquid, one of ordinary skill in the art would not be motivated to combine the teachings of Birch and Baier in an attempt to arrive at the presently claimed subject matter of claim 1. In other words, Birch and Bier teach the opposite to the subject matter of claim 1. Moreover, even if one of ordinary skill in the art happens to combine the teachings of the two, the combined references still do not teach the "device for creating hanging drops, the device having at least two elevations made of a hydrophobic material and with a substantially planar and rectangular top limit surface onto which in each case between 10 and 80 μ l of liquid medium can be applied, the distance between adjacent elevations being at least 0.5 mm, and the elevations having, at the top limit surface, at least two sharp-edged boundaries arranged parallel

to one another,” as recited in claim 1 (underline added). Rejected claims 19, 20, 25, and 26 depend directly or indirectly from claim 1, and thus are allowable for at least this reason.

III. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claim 1. Claim 8 has been canceled without prejudice or disclaimer, thereby rendering the rejection thereof moot. Claims 2-7 and 9-26 depend from claim 1 and are allowable for at least this reason. Since none of the other prior art of record, whether taken alone or in any combination, discloses or suggests all the features of the claimed subject matter, Applicants respectfully submit that independent claim 1, and all the claims that depend therefrom, are allowable.

CONCLUSION

Applicants believe that a full and complete response has been made to the pending Office Action and respectfully submit that all of the stated grounds for rejection have been overcome or rendered moot. Accordingly, Applicants respectfully submit that all pending claims are allowable and that the application is in condition for allowance.

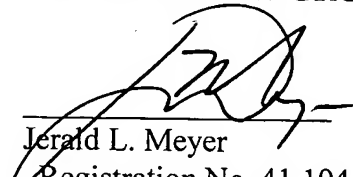
Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative at the number below to expedite prosecution.

Prompt and favorable consideration of this Reply is respectfully requested.

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THE NATH LAW GROUP
112 South West Street
Alexandria, VA 22314-2891
Tel: 703-548-6284
Fax: 703-683-8396

Respectfully submitted,
THE NATH LAW GROUP



Gerald L. Meyer
Registration No. 41,194
Derek Richmond
Registration No. 45,771
Sung Yeop Chung
Registration No. 64,130
Customer No. 20529

APPENDIX

